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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,957	11/30/2006	Kristine Fuimaono	32860-001019/US	3067
30596	7590	09/09/2011	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			NGUYEN, HIEN NGOC	
P.O.BOX 8910			ART UNIT	PAPER NUMBER
RESTON, VA 20195			3777	
			NOTIFICATION DATE	DELIVERY MODE
			09/09/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/569,957	FUIMAONO ET AL.	
	Examiner	Art Unit	
	HIEN NGUYEN	3777	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-3,6,8-15,17,18 and 21-23 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-3,6,8-15,17,18 and 21-23 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 02/28/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 15, 22, 1-3, 9-10, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002), further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)), Maurincomme et al. (US 2001/0036303) and Webler (US 2007/0055142).

3. Addressing claims 15 and 22 Packer discloses at least one input interface for electroanatomical mapping data and 3D image data, the 3D image data being high resolution image data (see Fig. 1, col. 2, lines 14-60, col. 3, lines 51-67, col. 5, lines 45-62, Packer discloses a system that perform an imaging method therefore the system must have at least one input interface for electroanatomical mapping data and 3D image data); an extraction module, designed to extract at least significant portions of an area to be treated by segmenting the 3D image data to obtain a 3D surface images of

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objects in the area which is to be treated to provide selected 3D image data (see Fig. 2A, col. 6, lines 14-45 and col.7, lines 7-23, segmentation is used to extract data); a registration module connected to the extraction module designed for correlation of the electroanatomical mapping data and the selected 3D image data in the correct position and dimension by matching the 3D surface images from the 3D image data to a 3D surface images from the mapping data (see Fig. 1, Fig. 8, col. 2, lines 14-60 and col. 9, line 21-col.10, line 36); a visualization module connected to the registration module to provide the 3D mapping data and the selected 3D image data for visualization in the correct position and dimension (see abstract, Fig. 1, Fig. 8, col. 2, lines 14-60 and col. 9, line 21-col.10, line 36, it would have been obvious to one skill in the art at the time of the invention that the visualization module is connected to the registration module in order to display the image). Packer discloses electroanatomical mapping data. However, he does not explicitly disclose electroanatomical mapping data is 2D or 3D. Further, Packer does not explicitly disclose a system that displays multiple images or multiple image data next to one another or side by side, surface profile, surface matching and automatically register images. Leiper discloses a system that displays multiple images side by side on one computer monitor or on multiple computer monitors so operator can compare the images (see Fig. 4-6 and col. 4 lines 16-27). Rose discloses surface profile provide images of the surface with fine detail (see claim 9 and [0005-0007]). Hemler discloses surface matching (see page 335, last paragraph). Maurincomme explicitly discloses automatic registration of 3D images (see abstract, claim 1, [0009] and [0048]; registration process is performed on a computer therefore

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there is an 3D interface for registration). Webler explicitly disclose electroanatomical/anatomical map is 3D (see [0014] and [0147]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer to have a system that displays multiple images side by side on one computer monitor or on multiple computer monitors, surface profile, surface matching as taught by Leiper, Rose, Hemler, Maurincomme and Webler because it would be easier for comparing and analyzing images when displaying 3D mapping data and 3D image data side by side on the same monitor or in multiple monitors; the surface profile provide extensive detail about the surface and surface matching is more efficient for matching surface images because this technique does not assume a correspondence between sample points.

Further it would have been obvious to one having ordinary skill in the art at the time of the invention was made to automatically register, since it has been held that broadly providing a mechanical or automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Venner*, 120 USPQ 192.

Further, resolution is associated with image quality and not dimensions. 3D image could have low resolution and 2D image could have high resolution.

4. Addressing claim 1, this method is perform by a device in claim 15. Therefore the method is rejected for the same reason as in claim 15.

5. Addressing claims 2 and 3, Packer discloses the 3D image data of the body region are recorded with a method of at least one of X-ray computer tomography and magnetic resonance tomography (see col. 1, lines 15-35 and col. 3, lines 51-67); the 3D image data of the body region are recorded by using 3D ultrasound method (see col. 1, lines 15-35 and col. 3, lines 51-67).

6. Addressing claims 10 and 14, Packer discloses the 3D image data are visualized via a volume rendering technique (see col. 6, line 1-13); registered 3D image data, real-time 3D mapping data and display a catheter in the selected 3D image data in real-time (see col. 2, lines 15-60 and col. 10, line 14-36).

7. Addressing claims 9 and 18, Hemler discloses correlate the correct position and the correct dimension using distinct anatomical points identifiable in 3D image data and in the 3D mapping data as an effective way to ensure the images on display are in correct position and dimension (see page 335, last paragraph, page 337, line 7- page 338, line 32).

8. Claims 17, 21 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002), further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion

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(provided as prior art in the IDS)), Maurincomme et al. (US 2001/0036303), Webler (US 2007/0055142) and Williams et al. (DE 19953308-A1).

9. Addressing claims 17 and 21, Hemler discloses register by correlate the correct position and the correct dimension using distinct anatomical points as an effective way to ensure the images on display are in correct position and dimension (see page 337, line 7- page 338, line 32); two stages of registration on page 335, last paragraph and page 337, line 7- page 338, line 32). Maurincomme discloses multiple stages of registration (see [0054] and Fig. 2). However, Packer, Leiper, Rose, Hemler, Maurincomme and William do not disclose correlate the correct position and the correct dimension using artificial marker. Williams discloses correlate the correct position and the correct dimension using artificial marker identifiable in 3D image data and in the 3D mapping data as an effective way to ensure the images on display are in correct position and dimension (see abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer's system to correlate the correct position and the correct dimension using artificial marker taught by Williams because using artificial markers is an effective way to ensure the images display are in correct position and dimension.

10. Addressing claim 6, the method is perform by a device in claim 21. Therefore the method is rejected for the same reason as in claim 21.

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11. Claims 23 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)), Maurincomme et al. (US 2001/0036303), Webler (US 2007/0055142) and Hughes et al. (US 7,233,340).

12. Addressing claim 23, Packer, Leiper, Rose, Hemler, Maurincomme and William do not disclose linking two visualizations together so that when user rotates, moves or scales one of the visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling. Hughes discloses a visualization module for linking two visualizations together so that when user rotates, moves or scales one of the visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling therefore the two visualizations would have the same position and dimension (see col. 11, lines 12-59). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer's system to link the two visualizations together so that when user rotates, moves or scales one of the visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling taught by Hughes because by linking two visualizations together so that when user rotates, moves or scales one of the visualizations the other visualization is simultaneously subjected to the same rotation, movement or scaling therefore the two visualizations would have the same position and dimension.

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13. Addressing claim 13, this method is performed by a device in claim 23. Therefore the method is rejected for the same reason as in claim 23.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)), Maurincomme et al. (US 2001/0036303), Webler (US 2007/0055142) and Schweikard et al. (US 6,144,875).

15. Addressing claim 8, Packer, Leiper, Rose, Hemler, Maurincomme and William do not disclose an artificial marker attached to the patient's thorax. Schweikard discloses an artificial marker attached to the patient's thorax to measure breathing and heart beat (see col. 7, lines 14-32). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer's method to attach a marker to the patient's chest taught by Schweikard because breathing and heartbeat can be measured by attaching a marker to the chest.

16. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002), and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)), Maurincomme et al. (US 2001/0036303), Webler (US 2007/0055142) and Krishnan (US 6,771,262).

17. Addressing claim 11, Packer, Leiper, Rose, Hemler, Maurincomme and Webler do not disclose an adjustable volume rendering transfer function. Krishnan discloses using an adjustable volume rendering transfer function to specify boundary condition to improve image quality (see col. 7, line 64-col.8, line 5). It would have been obvious to one skill in the art at the time of the invention to modify Packer's method by using an adjustable volume rendering transfer function because adjustable volume rendering transfer function would specify boundary condition and improve image quality.

18. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Packer et al. (US 6,556,695), in view of Leiper (US 6,128,002) and further in view of Rose (US 2002/0176608), Hemler et al. (A System for Multimodality Image Fusion (provided as prior art in the IDS)), Maurincomme et al. (US 2001/0036303), Webler (US 2007/0055142) and Massaro et al. (US 2002/0087329).

19. Addressing claim 12, Packer, Leiper, Rose, Hemler, Maurincomme and Webler do not disclose visualized image data on a polygonal grid. Massaro discloses visualize image on a polygonal grid for easily matching location and determine distance (see claim 58). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Packer's method to visualized image data on a polygonal grid taught by Massaro because polygonal grid allow the viewer to easily match location and determine distance.

Response to Arguments

Applicant's arguments filed 08/10/2011 have been fully considered but they are not persuasive. Applicant argues that the Rose reference is not about medical imaging and therefore it would not have been obvious to one of ordinary skill in the art at the time of the invention to combine Rose with Packer. Applicant argues that the examiner used hindsight in the combination and that the art are non-analogous. Examiner disagrees and submits that Rose is also involved with the problem of extracting surface profile, well known and ubiquitous in the field of imaging. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Examiner submits that the basis of all rejections were based on the cited references and nothing was gleaned from applicant's disclosure. In response to applicant's argument that Rose is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed

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invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the analogous art is in the field of imaging, where the principles and concepts such as surface profile extraction are applicable in many different areas. It would have been obvious to one of ordinary skill in the art at the time of the invention to use imaging techniques from roads, architecture, web/graphic design, movies, etc. for medical imaging because the principles and concepts do not discriminate against the different applications.

Applicant argues examiner relies on six references to make the rejection is over-estimating the capabilities of a person of ordinary skill in the art. It is not apparent to the examiner what is the correlation between the number of references and the capabilities of a person of ordinary skill in the art. Applicant's argument is not persuasive because the main reference (Packers) does not explicitly disclose some well known limitations and examiner relies on other references to disclose explicitly these well known limitations (automatic registration, 3D images, surface matching, surface profile, etc.) in order to make a clear record. In essence, examiner provided explicit evidence that it only requires ordinary skill in the art in the field of imaging to perform automatic registration, surface matching and surface profile.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIEN NGUYEN whose telephone number is (571)270-7031. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Chen can be reached on (571) 272-3672. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HIEN NGUYEN/
Examiner, Art Unit 3777

/Tse Chen/
Supervisory Patent Examiner, Art Unit 3777